ORDER NO. TSD-7608-258

Service Manual

FM/AM/FM STEREO RADIO WITH 8-TRACK PLAYER/RECORDER, CASSETTE PLAYER/ RECORDER AND RECORD CHANGER

Compact Stereo

SG-4010

Specifications

AMPLIFIER SECTION

Power Output	MPO 2 × 15W (THD 5%, 8 ohm)
Frequency Response	25 Hz ~ 30 kHz, −3 dB
REC OUT	150 mV
Tone Controls:	
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
Loudness	+8 dB at 100 Hz +3 dB at 10 kHz

FM TUNER SECTION

Frequency Range	87.5 ~ 108 MHz
Intermediate Frequency	10.7 MHz
Sensitivity	4 μV (S/N 30 dB, MOD 30%)
Harmonic Distortion	0.5%
Signal to Noise Ratio	65 dB (at 1 kHz, 60 dB, 100%)
Stereo Separation	35 dB (at 1 kHz, 60 dB, 30%)
Antenna	300 ohm Balanced

AM TUNER SECTION

Frequency Range	525 ~ 1605 kHz
Intermediate Frequency	455 kHz
Sensitivity	100 μV/m for 50mW
Antenna	Built-in Ferrite Bar Antenna

RECORD PLAYER SECTION

Type	Automatic Record Changer
Turntable	28 cm (11″)
Turntable Speed	33-1/3, 45 and 78 RPM, 3-speed
Phonomotor	4-Pole Induction
Cartridge	Moving Magnet, EPC-82SMBD
Stylus	Diamond, EPC-31STSD
Stylus Pressure	4 ~ 5 g

SPEAKER SECTION

Type	2-Way, Air Suspension 20 cm (8″), 5 cm (2″)
Impedance	8 ohm

CASSETTE TAPE PLAYER/RECORDER SECTION

Playing System	Auto-Stop Cassette
Track System	4-Track, 2-Channel
Recording System	AC Bias, 52 kHz
Erasing System	AC Erase, 52 kHz
Tape Speed	4.75 cm/sec. (1-7/8 i.p.s.)
Frequency Response	70 Hz ~ 10 kHz (Normal) 70 Hz ~ 12 kHz (CrO_2) 70 Hz ~ 12 kHz (FeCr)
Wow and Flutter	0.2% (WRMS)

8-TRACK TAPE PLAYER/RECORDER SECTION

Playing System	8-Track, Auto Eject
Track System	8-Track, 2-Channel
Recording System	AC Bias, 47 kHz
Erasing System	AC Erase, 47 kHz
Tape Speed	9.5 cm/sec. (3-3/4 i.p.s.)
Frequency Response	40 Hz ~ 12 kHz
Wow and Flutter	0.2% (WRMS)

POWER SUPPLY ..... AC 100 ~ 115V, 115 ~ 130V, 200 ~ 225V, 225 ~ 250V, 50/60 Hz

POWER CONSUMPTION 100W

DIMENSIONS (W × H × D)

Center Unit	553 mm × 286.5 mm × 424 mm (21-25/32″) × (11-9/32″) × (16-11/16″)
Speaker Unit	290 mm × 494 mm × 217 mm (11-13/32″) × (19-7/16″) × (8-17/32″)

WEIGHT

Center Unit	18 kg (39 lb. 11 oz)
Speaker System	5.5 kg (12 lb. 2 oz) each

National Panasonic

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

LOCATION OF PARTS

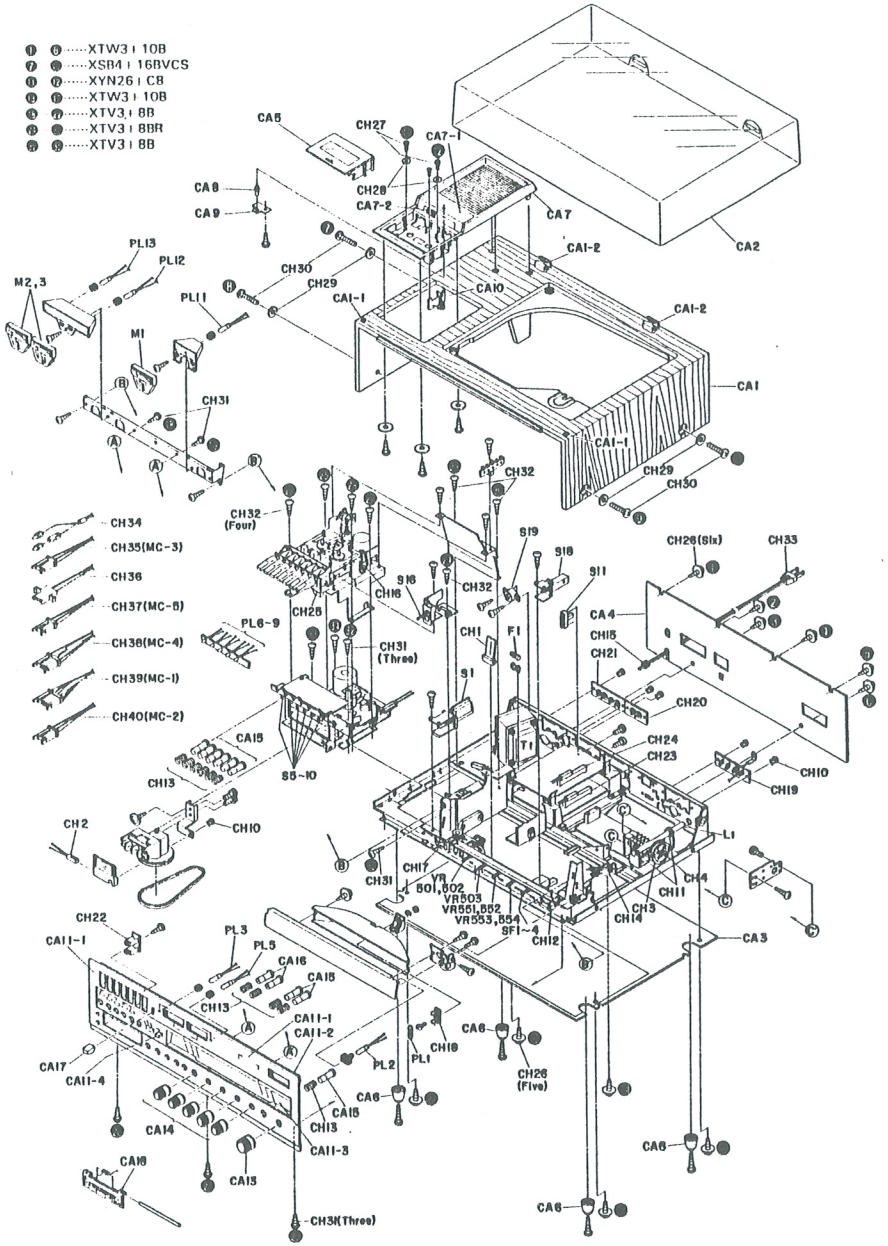


FIG. 4

EXPLODED VIEW OF 8-TRACK PLAYER/RECORDER

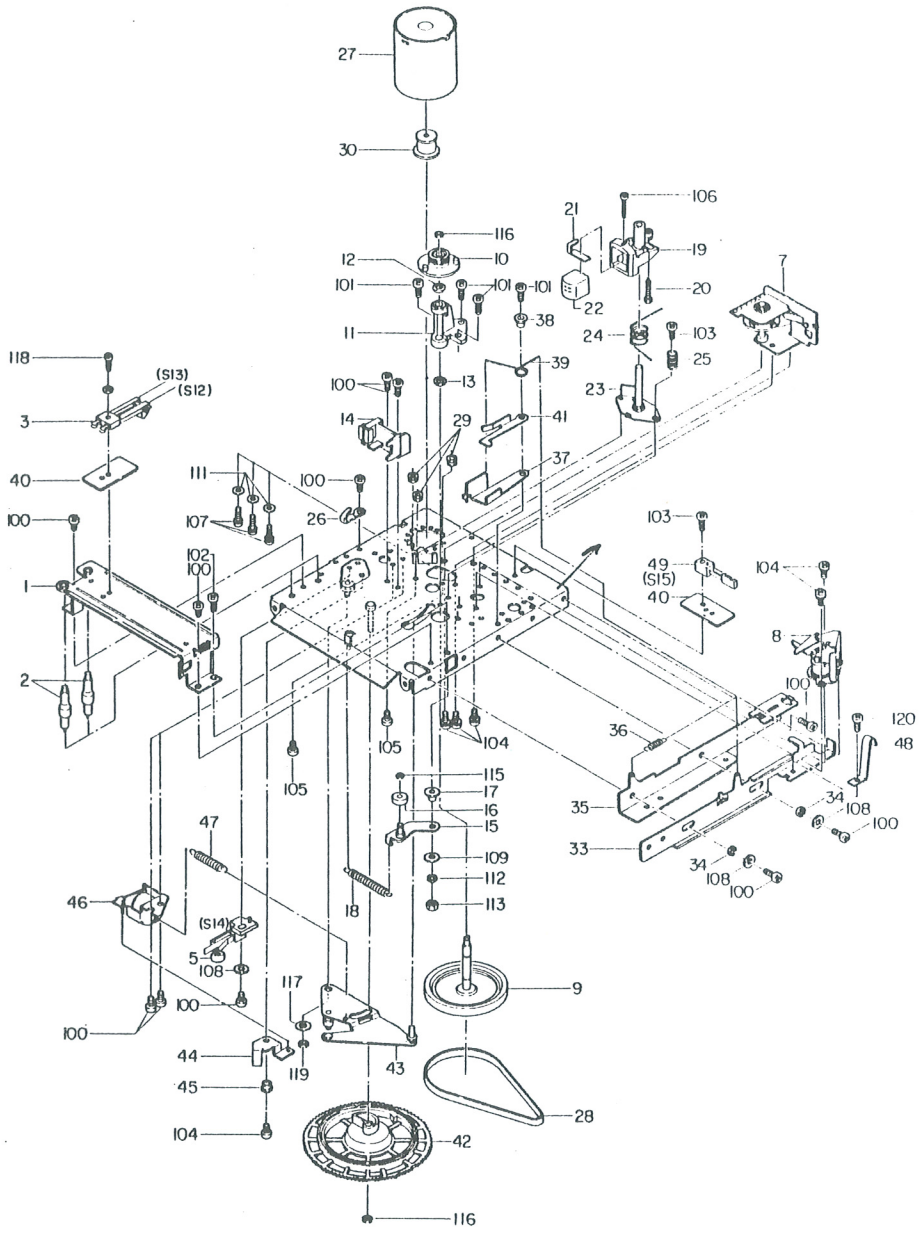
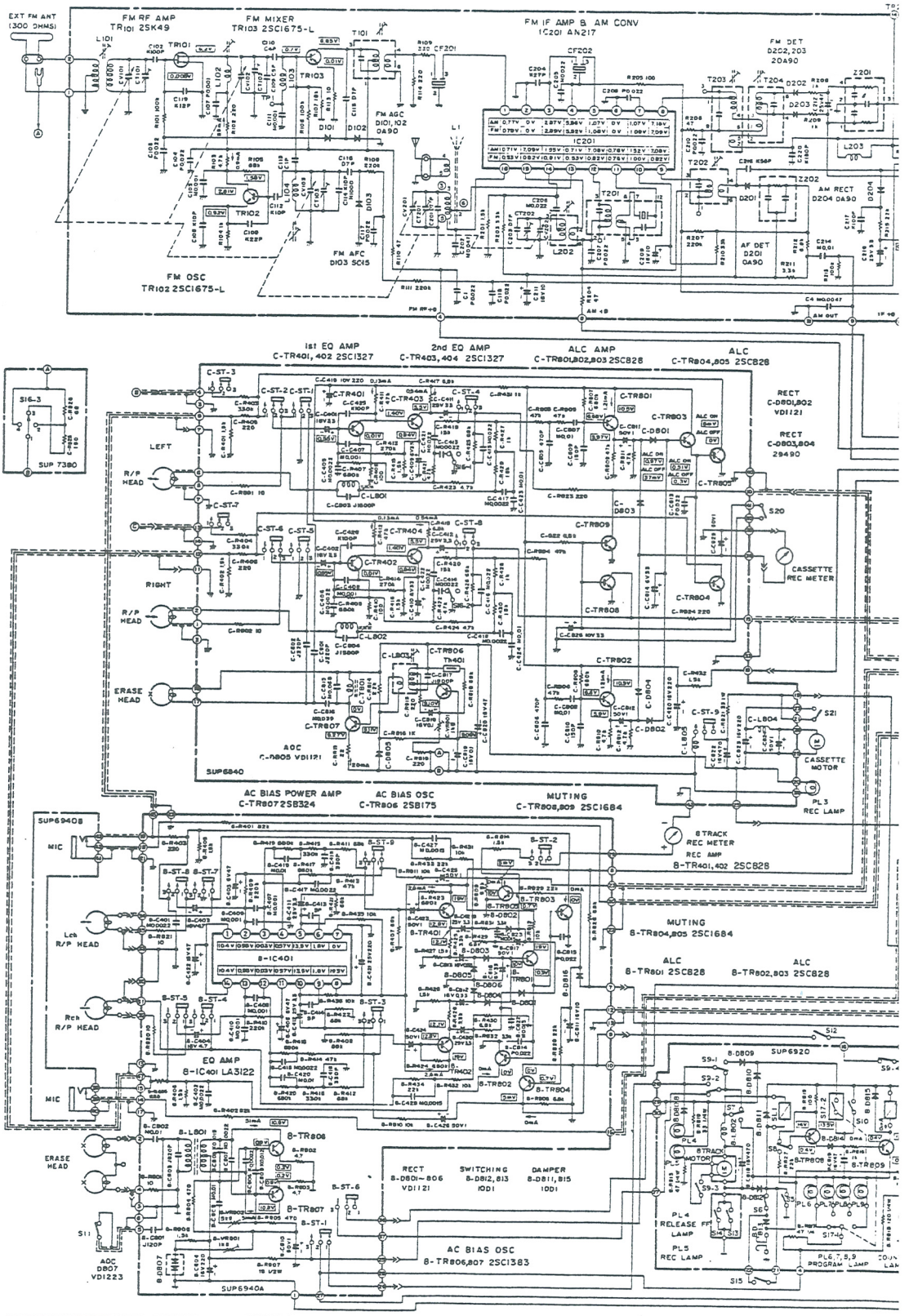


FIG. 5

SCHEMATIC DIAGR



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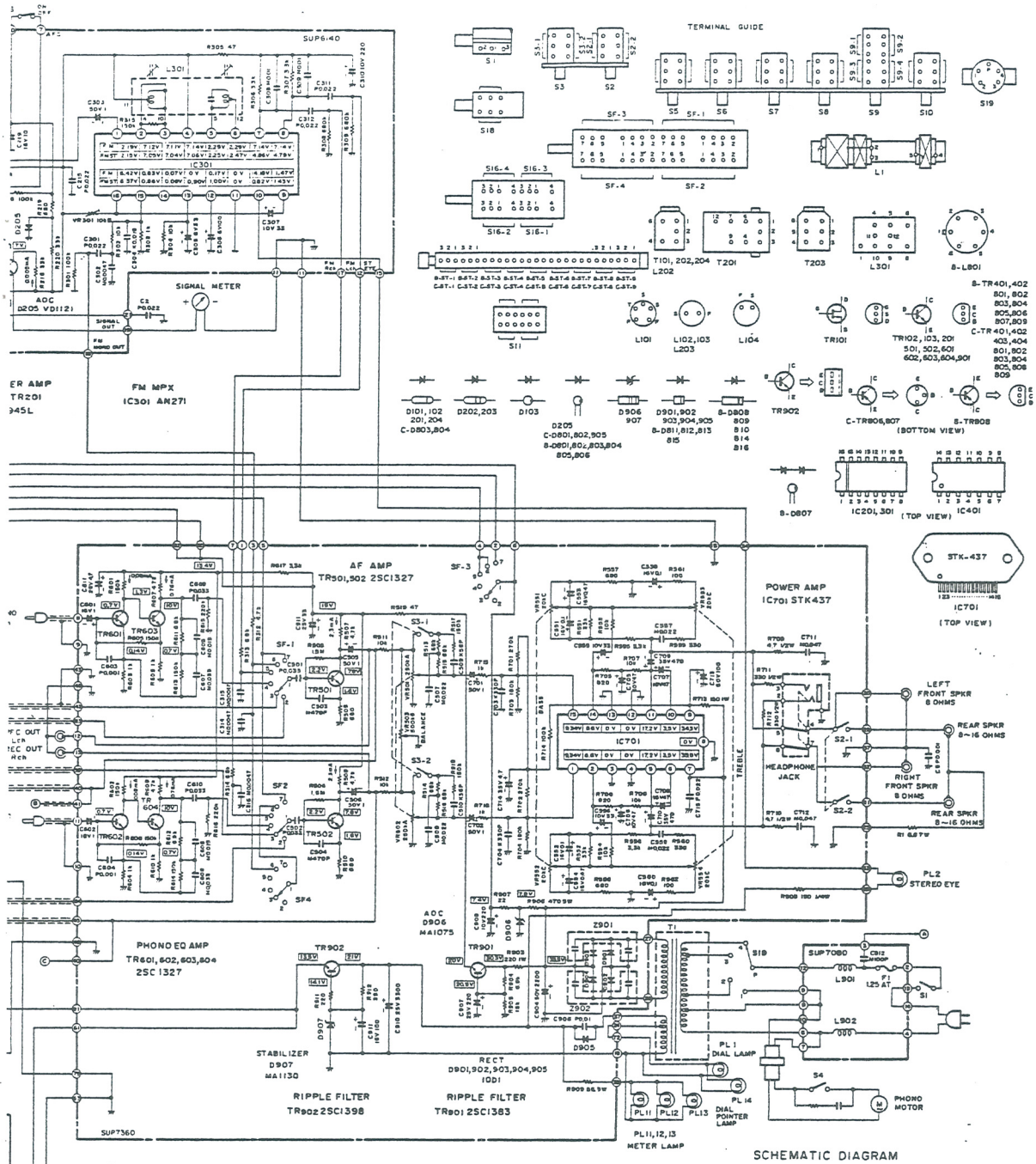
M OF MODEL SG-4010



SCHEMATIC DIAGRAM
MODEL NO. SG-4010

NOTES

1)
- S1 : POWER SWITCH in "OFF" position
- S2 : 4CH MATRIX SWITCH in "STEREO" position
- S3 : LOUDNESS SWITCH in "OFF" position
- S4 : PHONO MOTOR SWITCH in "OFF" position
- S5 : PROGRAM SELECTOR SWITCH in "OFF" position
- S6 : REPEAT SWITCH in "OFF" position
- S7 : PAUSE SWITCH in "OFF" position
- S8 : AUTO EJECT SWITCH in "OFF" position
- S9 : FF SWITCH in "OFF" position
- S10 : EJECT SWITCH in "OFF" position
- S11 : WHISTLE DEFEAT SWITCH in "A" position
- S12 : 8-TRACK MUTING SWITCH in "OFF" position
- S13 : 8-TRACK MOTOR SWITCH in "OFF" position
- S14 : 8-TRACK MOTOR SWITCH in "OFF" position
- S15 : REPEAT DEFEAT SWITCH in "OFF" position
- S16 : CASSETTE TAPE SELECTOR SWITCH in "NORMAL" position
- S17 : 8-TRACK PROGRAM INDICATOR SWITCH in "PROGRAM 1" position
- S18 : AFC SWITCH in "OFF" position
- S19 : POWER VOLTAGE SELECTOR SWITCH in "240V" position
- S20 : CASSETTE MUTING SWITCH in "ON" position
- S21 : CASSETTE MOTOR SWITCH in "OFF" position
- ST : 8-TRACK & CASSETTE REC/PLAY SWITCH in "PLAY" position
- SF : FUNCTION SELECTOR SWITCH in "CASSETTE / MIC" position (1. COMMON 2. 8-TRACK/MIC 3. CASSETTE/MIC 4. PHONO 5. FM STEREO 6. FM 7. AM)

2) LETTERS J, K, M and P indicate tolerance of capacitors as follows: J: ±5% K: ±10% M: ±20% P: +100% −0%

3) DC voltages are to be measured with VTVM under no signal condition in "AM," "FM" or "FM STEREO" position and also in RECORDING MODE

ALIGNMENT INSTRUCTIONS (CASSETTE PLAYER/RECORDER)

PRESSURE ROLLER ADJUSTMENT

1. Switch set to PLAY. (Do not insert cassette.)
2. Hook Spring gauge to arm of pressure roller, as shown in Fig. 15.
3. Pull pressure roller away from the capstan in the direction of arrow 1 with spring gauge and slowly permit the pressure roller to return forward capstan in the direction of arrow 2.
4. Measure tension at time when pressure roller makes contact with capstan (or when pressure roller start rotating).
5. The standard tension of pressure roller should be 250 ~ 380g.
6. If pressure is not within these limits;
   Clean the rubber roller and capstan with a soft cloth moistened with alcohol or replace pressure spring.

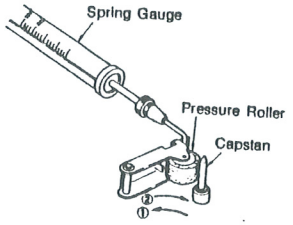


FIG. 15

TAKE-UP TORQUE ADJUSTMENT

* Test Tape: SRK-CT (Take-up Torque Meter)

1. Insert test tape.
2. Rewind the tape to its starting point.
3. Switch set to PLAY.
4. Read "▶" mark of indicator on take-up side, as shown in Fig. 16.
5. Repeat PLAY-STOP several times and read the average tension.
6. The standard take-up tension should be 30 ~ 70 g.cm.
   If take-up tension is not within these limits;
   a) Clean main belt, take-up reel and all parts which contact them with a cotton swab moistened with alcohol, and/or
   b) Switch set to "OFF", remove main belt and make sure that take-up reel and take-up clutch are rotating smoothly.
   c) Change take-up clutch tension by turning the friction spring under reel table, as shown in Fig. 17, and/or
   d) Replace take-up clutch.

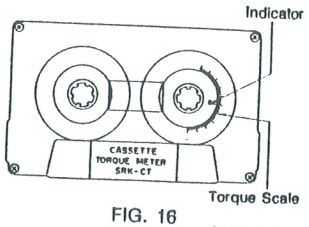


FIG. 16

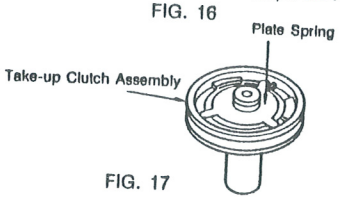


FIG. 17

Control Setting and Procedure:
1. Function Selector ..... CASSETTE
2. Balance Control..... Center
3. Depress push buttons PLAY and REC at the same time. (Be sure to release the record safety lever manually.)
4. Tape Selector..... CrO_2

STEP	CIRCUITS	VTVM CONNECTION	VOLUME CONTROL	ADJUSTMENT	REMARKS
1	AC BIAS OSCILLATOR and ERASE	Connect positive side to pin No. 17 (+) and negative side to pin No. 16 (−). (Refer to Fig. 18)	MIN.	L803, VR801 Erase Bias Adjust	Adjust L803 for maximum output. Adjust VR801 for 8.5 ± 0.2 mV reading on VTVM-1.
2	AC BIAS OSCILLATOR and ERASE	Connect positive side to pin No. 5 and negative side to pin No. 3. (Refer to Fig. 18)	MIN.	L801 REC Bias Adjust	Adjust L801 for 4.2 ± 0.2 mV reading on VTVM-1.
3	AC BIAS OSCILLATOR and ERASE	Connect positive side to pin No. 1 and negative side to pin No. 3. (Refer to Fig. 18)	MIN.	L802 REC Bias Adjust	Adjust L802 for 4.2 ± 0.2 mV reading on VTVM-2. Repeat steps (2) and (3).

Notes:
1. Do not touch R/P Head and Erase Head when adjusting.
2. As two points are obtainable when adjusting the L801 and L802, turn cores down clockwise before making adjustments.

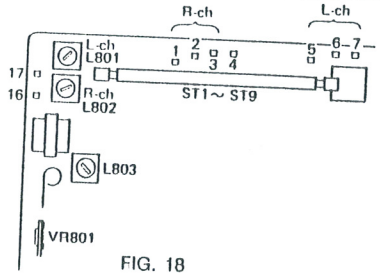


FIG. 18

RECORD/PLAYBACK HEAD AZIMUTH ADJUSTMENT

Playback a Standard Alignment Tape and turn Azimuth Adjusting Screw for maximum loudness.

* **Test Tape (6.3 kHz)**
  VTT-652 or Equivalent

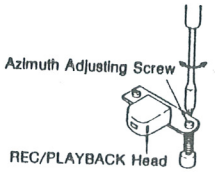


FIG. 19

EXPLODED VIEW OF CASSETTE PLAYER/RECORDER

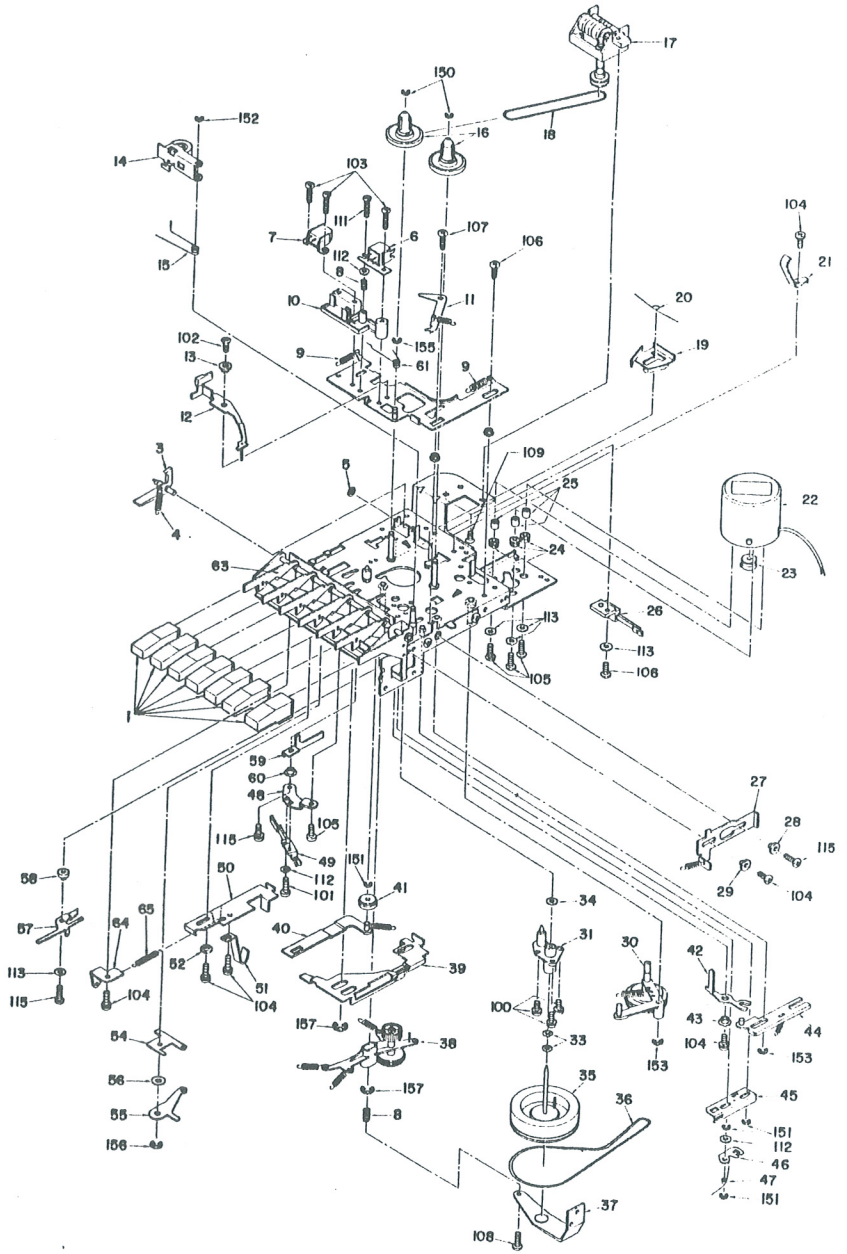


FIG. 20

EXPLODED VIEW OF RECORD CHANGER

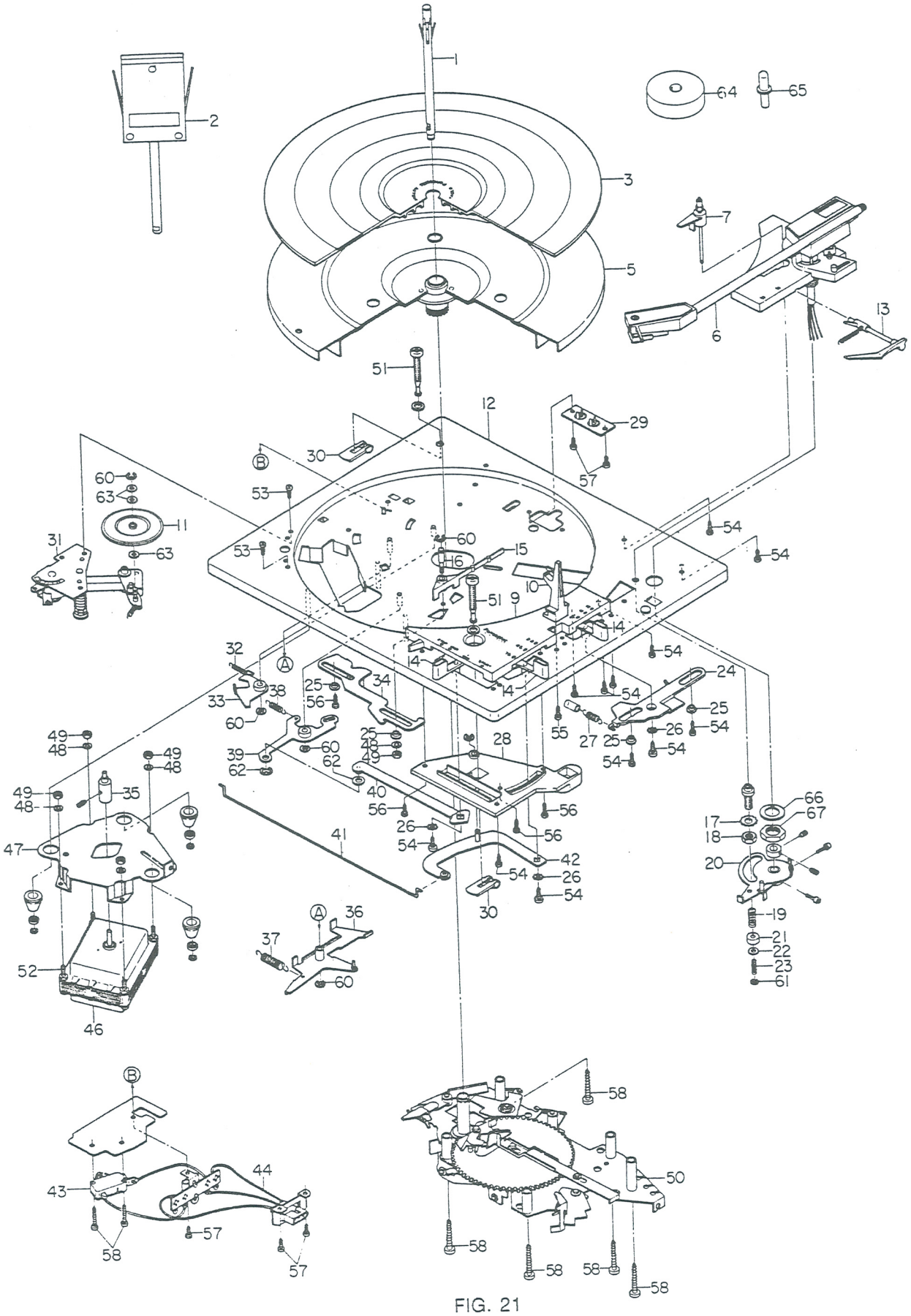


FIG. 21